KERR-McGEE CORPORATION
110 N. MARIENFELD, SUITE 200 • MIDLAND, TEXAS 79701

November 18, 1991

PHONE
915 688-7000

Director
Oil Conservation Division
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87504

Gentlemen:

Enclosed are three copies of Kerr-McGee's Application for Authorization to Inject.

Kerr-McGee's proposal is to use its Hahn Federal Well No. 2, Tom Tom San Andres pool, for subsurface disposal into the San Andres formation of produced water from wells on its leases in the pool.

Also enclosed is a copy of Kerr-Mcgee's agreement with the surface owners concerning the proposed disposal well and necessary pipelines to move produced water to the proposed disposal well. The Hahn Federal leasehold is mineral reserved land. The land is privately owned but the minerals are reserved to the United States.

Western Reserves Oil Company, the only leasehold operator other than Kerr-McGee within one-half mile of the proposed disposal well, and the two surface owners, Margie S. Grimes and Faye S. Booher, are being furnished copies of this application by certified mail. Copies of return receipts will be furnished as soon as received.

Legal advertisement of this proposed salt water disposal well in the Roswell Daily Record is arranged for and proof of publication will be furnished.

If there are any questions concerning this application, or if any other information is needed, please let me know.

Sincerely,

Stephen N. Landgrave
Senior Engineering Supervisor

SNL/jai
Attachments

cc: NMOCD, Hobbs, w/ a complete copy of this application ✓

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no

II. Operator: Kerr-McGee Corporation

Address: P. O. Box 11050, Midland, Texas 79705

Contact party: S. N. Landgrave Phone: 915 688-7023

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: S. N. Landgrave Title Senior Engineering Supervisor

Signature: S. N. Landgrave Date: 11/19/91

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

XIII. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

NOV

INJECTION WELL DATA SHEET

SIDE 1

Kerr-McGee Corporation	Hahn Federal		
OPERATOR	LEASE		
2	1980' FEL & 660' FSL	27	T7S	R31E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic

Tabular Data

Surface Casing

Size 8-5/8 " Cemented with 250 sx.

TOC Surface feet determined by Circ 35 sks

Hole size 12-1/4"

Intermediate Casing

Size _____ " Cemented with _____ sx.

TOC _____ feet determined by _____

Hole size _____

Long string

Size 4-1/2" " Cemented with 250 sx.

TOC 3338 feet determined by CAL with Caliper

Hole size 7-7/8"

Total depth 4100'

Injection interval

3945 feet to 3988 feet

(perforated or open-hole, indicate which)

INJECTION WELL DATA SHEET -- SIDE 2

Tubing size 2-3/8" lined with Plastic Coating (material) set in a

Baker Tension Set (brand and model) packer at within 100' feet of Perfs

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation San Andres

2. Name of Field or Pool (if applicable) Tom Tom

3. Is this a new well drilled for injection? / / Yes /x/ No

   If no, for what purpose was the well originally drilled? Production

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) Perforated in Lower San Andres, Squeezed with 75 sacks

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None

APPLICATION FOR AUTHORITY TO INJECT

SUPPLEMENTAL INFORMATION

KERR-MCGEE CORPORATION
WELL NO. 2 HAHN FEDERAL
CHAVES COUNTY, NEW MEXICO

ITEM:

WELL DATA - PROPOSED INJECTION

A. 1) Well Name: Kerr-McGee Well No. 2 Hahn Federal

Location: 1980' FEL and 660' FSL of Section 27, T7S, R31E, Chaves County, New Mexico

Spudded: July 23, 1975 - Total Depth 4100'

Initial Completion: Perforated San Andres interval 4065-4103' with 11 holes. Acidized perforation with 5000 gallons. Well was not economically productive in this interval and therefore zone was squeezed with 75 sacks. The well was reperforated 3945-3988' with 15 holes. Acidized well with 5000 gallons. Well tested 9-15-75 at 102 BOPD and 6 BWPD.

Present Status: Pumping

2) Casing Data:

Surface Casing:

8-5/8", 24#, K-55 casing set at 403' in 12-1/4" hole. Cemented with 250 sacks of Class "C" cement with 2% CaCl. Cement circulated.

Production Casing:

4-1/2", 10.5#, H-40, ST&C casing set at 4100' in 7-7/8" hole. Cemented with 250 sacks of Class "C" Pozmix with 2% gel, 3/4% CFR-2 and 8# salt per sack. Estimated top of cement at 3338'. Cement top calculated using Caliper log to determine hole size and assuming 85% fillup.

3) Injection Tubing:

Size: 2-3/8" O.D.

Lining Material: Plastic

Setting
Depth: Within 100 feet of top perforation

4) Injection Packer:

Baker Model AD-1 Tension Packer to be set within 100' feet of top perforation.

B. 1) Injection Formation:

San Andres formation. The proposed injection well is in the Tom Tom San Andres pool.

2) Injection Inverval:

Initially, injection is to be into existing perforations as follows:

3945-45', 3952-53', 3960-61', 3967-68', 3972-73', 3981-83 and 3988'

3) Original Purpose of Well:

This well was drilled originally as a San Andres test, and was completed for San Andres production in the Tom Tom San Andres pool.

MAP

Enclosed is a land plat showing the proposed injection well with a 2-mile radius and a one-half mile radius circle drawn around the well. The one-half mile radius circle identifies the wells' "area of review".

WELLS IN AREA OF REVIEW

Enclosed is a tabulation of data on all wells in the area of review. There are no plugged wells in the area of review.

PROPOSED OPERATION DATA

1) Proposed Average Daily Injection Rate: 200 Barrels
Proposed Maximum Daily Injection Rate: 400 Barrels

2) Type of System: Open

3) Expected Average Injection Pressure: 1400 psi
Expected Maximum Injection Pressure: 1530 psi

A Step Rate test was run on the immediate offset well (see attached) and a fracture pressure of the formation was calculated at 1580 psi.

4) Sources of Injection Water:

The water to be disposed of is produced San Andres water from Kerr-McGee's producing leases in the Tom Tom pool. An analysis of this produced water is presented. Since the water to be disposed of will be reinjected produced water, there should be no compatibility problem.

INJECTION FORMATION

1) The proposed injection formation is the San Andres, in this area, has a gross thickness of about 1400 feet and conists mainly of alternate beds of dolomite and anhydrite. The top of the San Andres in this proposed injection well was picked at a depth of 3165'.

2) Fresh water wells in this area produce from sandy zones in the Chinle (Triassic) red beds at depth of approximately 175 to 200 feet. There are no fresh water zones below the proposed injection interval in the San Andres formation.

STIMULATION PROGRAM

If believed necessary, the proposed injection interval will be acidized with approximately 1500 gallons.

WELL LOG

A copy of a portion of the well log showing the proposed injection interval is attached.

FRESH WATER WELLS

Analysis of water taken from the operating windmills in Section 26 and in the NE/4 of Section 35 are attached.

AFFIRMATIVE STATEMENT

Examination of available geologic and engineering data resulted in no evidence of open faults or any other hydrologic connection between the disposal zone and any undergound source of drinking water.

PROOF OF NOTICE

Proof of publication will be furnished.

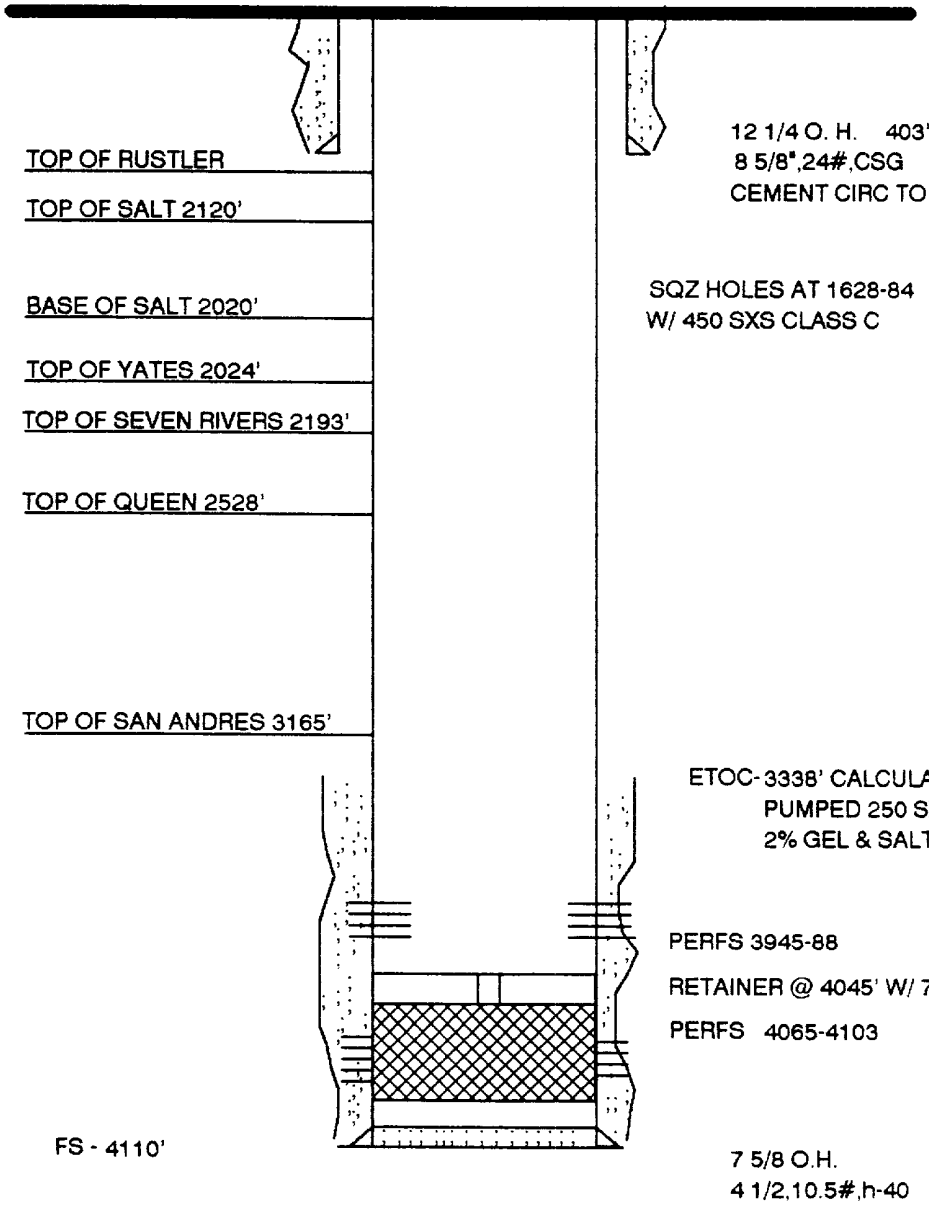
The owners of the surface on which the proposed disposal well is located, and Western Reserves Oil Company, the only leasehold operator, other than Kerr-McGee, within one-half mile of the well are being furnished copies of this application.

KERR McGEE CORPORATION
HAHN FEDERAL WELL 2

SPUD - 7-23-75

GL - 4370'

KB - 4381'



12 1/4 O. H. 403'
8 5/8",24#,CSG
CEMENT CIRC TO SURFACE

SQZ HOLES AT 1628-84
W/ 450 SXS CLASS C

ETOC- 3338' CALCULATED FROM CALIPER
PUMPED 250 SXS CLASS C POZ W/
2% GEL & SALT

PERFS 3945-88

RETAINER @ 4045' W/ 75 SXS CMT BELOW

PERFS 4065-4103

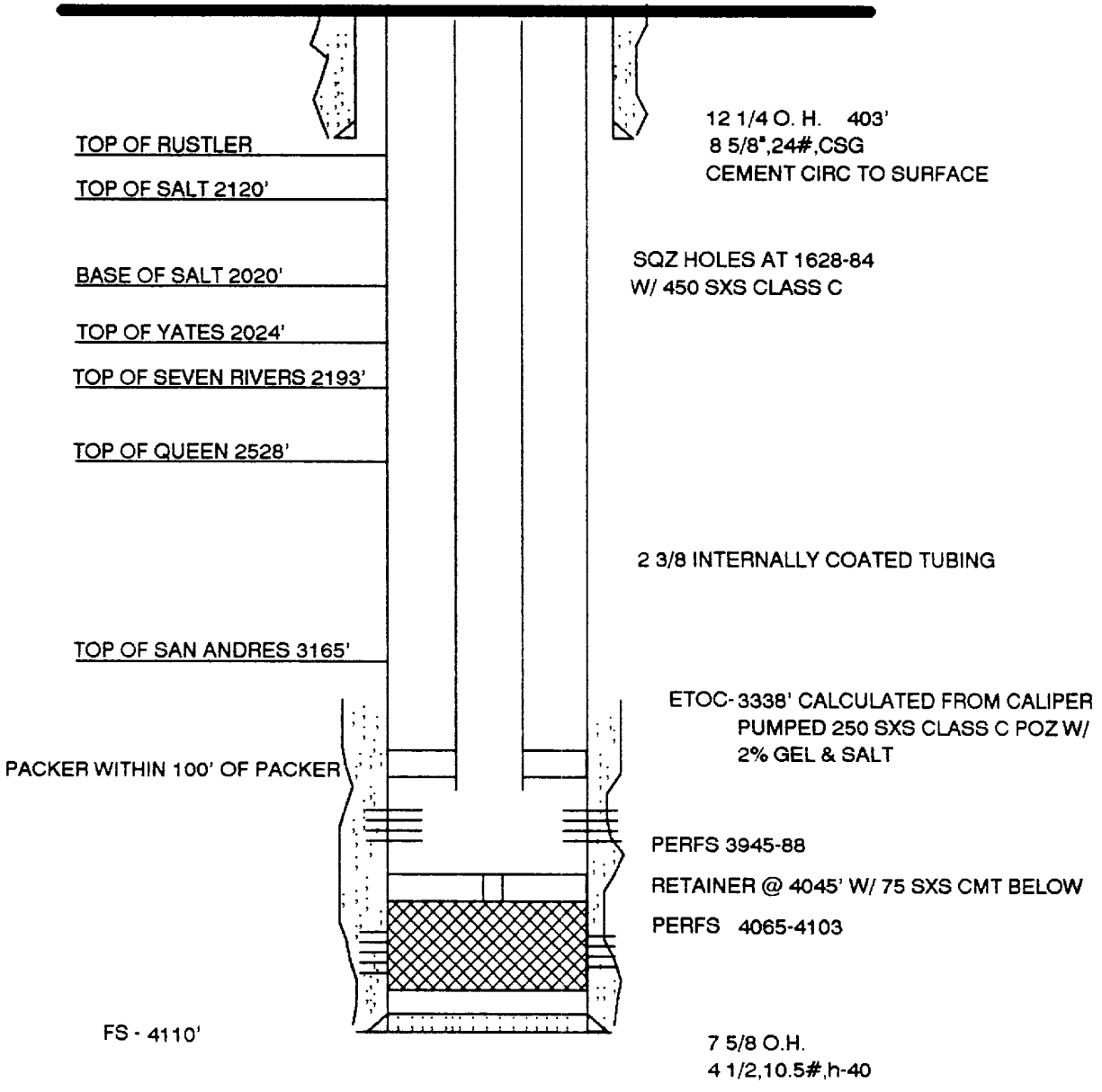
7 5/8 O.H.
4 1/2,10.5#,h-40

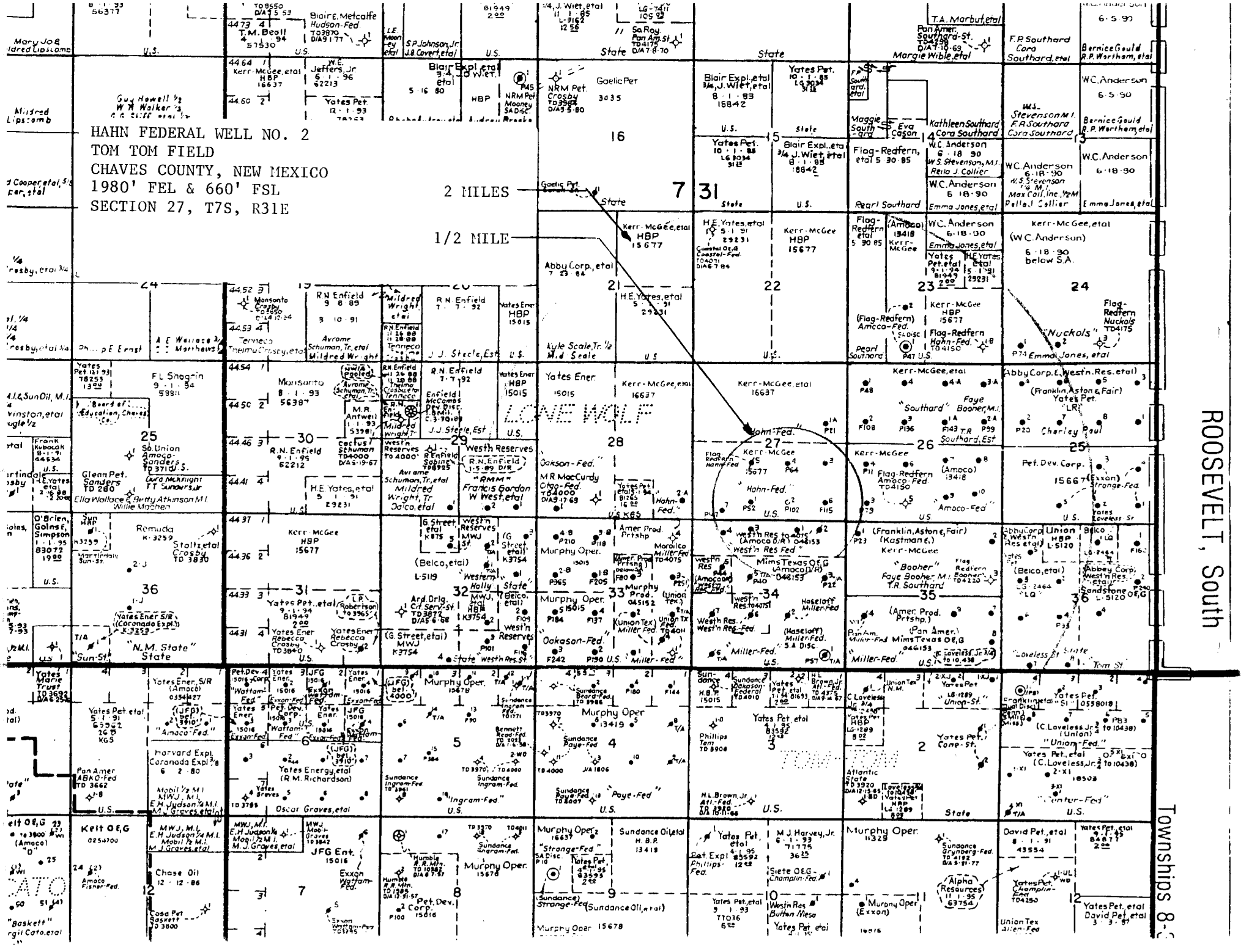
KERR McGEE CORPORATION
HAHN FEDERAL WELL 2

SPUD - 7-23-75

GL - 4370'

KB - 4381'




HAHN FEDERAL WELL NO. 2
TOM TOM FIELD
CHAVES COUNTY, NEW MEXICO
1980' FEL & 660' FSL
SECTION 27, T7S, R31E
2 MILES
1/2 MILE
ROOSEVELT, South
Townships 8-
Love Waf
"N.M. State"
"Nuckols"
"Union-Fed."
"Winter-Fed"
"Baskett"
"Booher"
"Ingram-Fed."
"Paye-Fed"
"Strange-Fed"
"RMM"
"Sandstone O&G"
"Amoco-Fed."
"Hahn-Fed."
"Miller-Fed."
"Strange-Fed"
"Union-Fed."
"Winter-Fed"
"Baskett"
"Booher"
"Ingram-Fed."
"Paye-Fed"
"Strange-Fed"
"RMM"
"Sandstone O&G"
"Amoco-Fed."
"Hahn-Fed."
"Miller-Fed."

WELL DATA

FOR

WELLS IN AREA OF REVIEW

WELL NAME AND NUMBER AND LOCATION BY UL, SEC., TWP., & RGE.	DATE COMPLETED	TOTAL DEPTH	SURFACE CASING					PRODUCTION CASING					PRODUCING INTERVAL	ACID TREATMENT	INITIAL 24-HR PROD. TEST			CURRENT STATUS
			SIZE	DEPTH SET	HOLE SIZE	AMOUNT CEMENT	CEMENT CIRCULATED	SIZE	DEPTH SET	HOLE SIZE	AMOUNT CEMENT	CALC. TOP OF CEMENT **			BBL.OIL	MCF GAS	BBL.WTR.	
Flag-Redfern Oil Co.																		
Hahn Federal Lease																		
Well No. 1 N 27 7S 31E	4-15-75	4080'	8-5/8"	385'	12-1/4"	250 sx	Yes	4-1/2"	4080'	7-7/8"	250 sx	3060'	3919'- 3971'	5000 gals	52	21.1	35	Pumping
Well No. 2 O 27 7S 31E	9- 6-75	4110'	8-5/8"	403'	12-1/4"	250 sx	Yes	4-1/2"	4110'	7-7/8"	250 sx	3250'	3945'- 3988'	5000 gals	102	24	6	Pumping
Well No. 3 I 27 7S 31E	11-11-75	4106'	8-5/8"	426'	12-1/4"	250 sx	Yes	4-1/2"	4104'	7-7/8"	250 sx	3150'	3957'- 4017'	5000 gals	14	6.1	8	Pumping
Well No. 4 J 27 7S 31E	11-18-75	4100'	8-5/8"	428'	12-1/4"	250 sx	Yes	4-1/2"	4100'	7-7/8"	250 sx	3300'	3940'- 4008'	7500 gals	64	31	58	Pumping
Well No. 7 M 27 7S 31E	3-18-81	4105'	8-5/8"	1473'	12-1/4"	750 sx	Yes	4-1/2"	4105'	7-7/8"	250 sx	3150'	3893'- 3962'	6000 gals	147	45	2	Pumping
Hahn Federal "A" Lease																		
Well No. 2 P 28 7S 31E	8-24-81	4120'	8-5/8"	1442'	12-1/4"	800 sx	Yes	4-1/2"	4120'	7-7/8"	250 sx	3170'	3876'- 4014'	8500 gals	9	14	1	Pumping
Western Reserves Oil Company																		
Western Reserves 34 Fed. Lease																		
Well No. 1 B 34 7S 31E	11- 1-79	4130'	8-5/8"	1666'	12-1/4"	700 sx	Yes	4-1/2"	4128'	7-7/8"	300 sx	3150'	3922'- 3961'	4250 gals	34	15	10	Pumping
Well No. 3 C 34 7S 31E	7-11-80	3991'	8-5/8"	1601'	12-1/4"	650 sx	Yes	4-1/2"	3990'	7-7/8"	300 sx	3000'	3904'- 3950'	2000 gals	50	25	15	Pumping
Well No. 4 D 34 7S 31E	10-18-80	3975'	8-5/8"	1463'	12-1/4"	650 sx	-	4-1/2"	3974'	7-7/8"	300 sx	3000'	3877'- 3910'	1000 gals	82	55	5	Pumping

**FOR FLAG-REDFERN WELLS: TOP OF CEMENT BEHIND PRODUCTION CASING WAS CALCULATED USING CALIPER LOG TO DETERMINE HOLE SIZE AND ASSUMING 85% FILLUP. AVERAGE CALCULATED HOLE SIZE WAS 9-1/4".

FOR WESTERN RESERVES WELLS: TOP OF CEMENT WAS CALCULATED USING 9-1/4" HOLE SIZE AND 85% FILLUP.

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

December 4, 1989

Kerr-McGee Corporation
110 N. Marienfeld
Suite 200
Midland, TX 79701

Attention: Kelly D. Jamerson

RE: Injection Pressure Increase
Hahn Federal Well No. 5
Chaves County, New Mexico

Dear Mr. Jamerson:

Reference is made to your request dated October 9, 1989, to increase the surface injection pressure on the Hahn Federal SWD Well No. 5. This request is based on a step rate tests conducted on the well on October 3, 1989. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on the well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well.

WELL AND LOCATION	MAXIMUM INJECTION SURFACE PRESSURE
Hahn Federal Well No. 5 Unit K, Section 27, T-7 South R-31 East, NMPM, Chaves County, New Mexico.	1530 PSIG

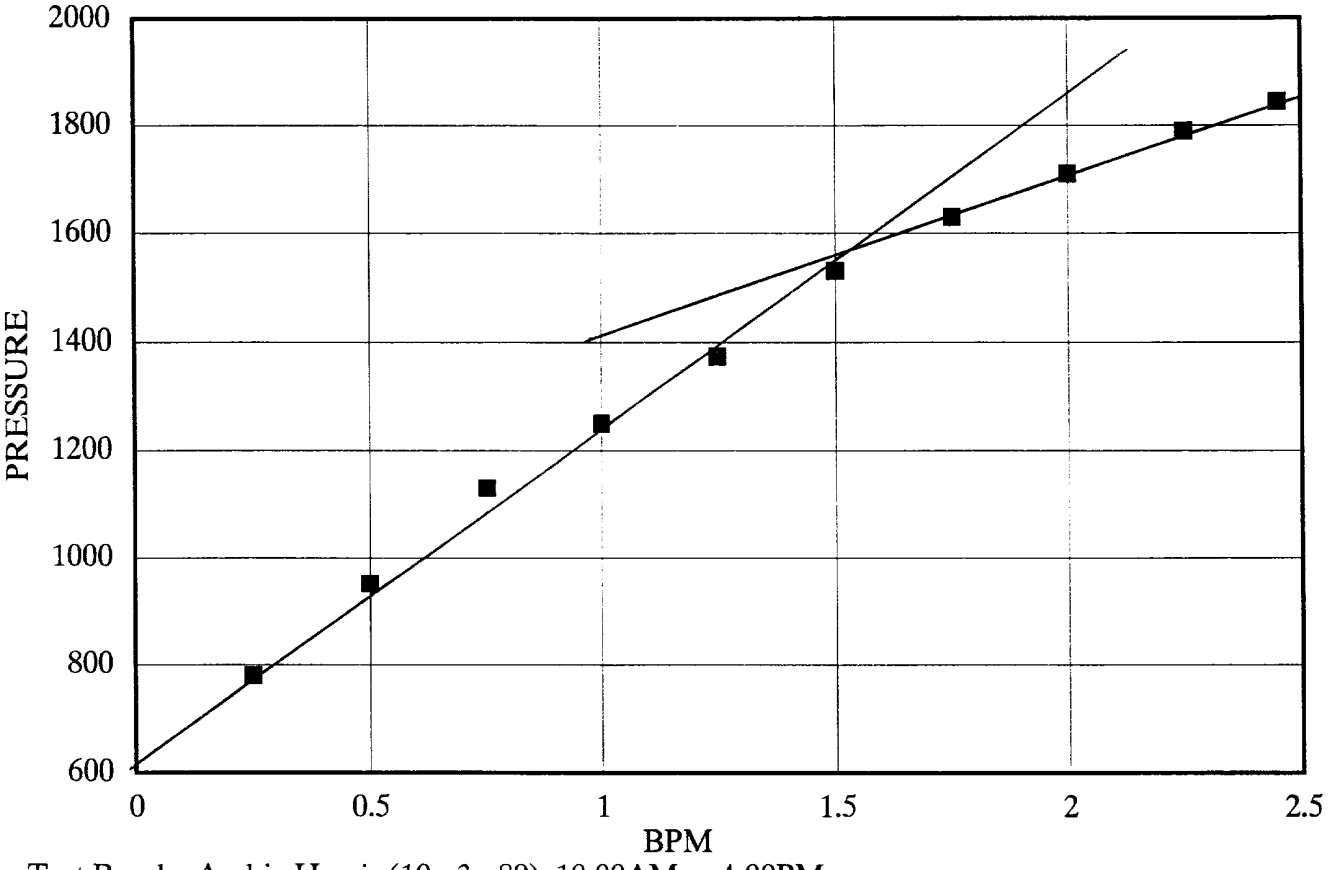
The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

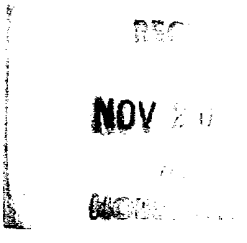
William J. LeMay
Director

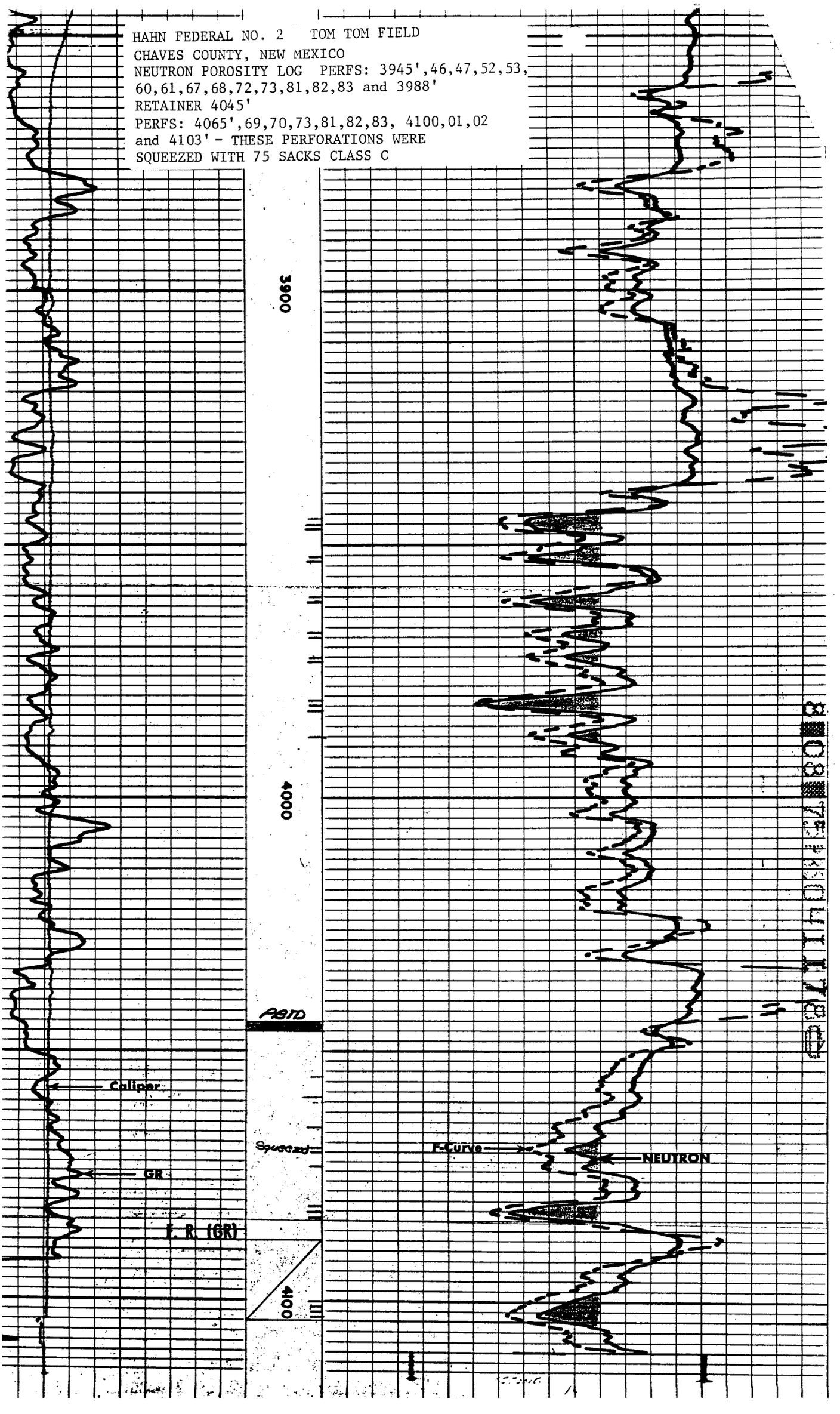
cc: Oil Conservation Division - Hobbs
File: SWD-341
T. Gallegos
D. Catanach

HAHN FEDERAL #5



Test Run by Archie Harris (10–3–89) 10:00AM – 4:00PM
Gandy Hot Oil Truck Halliburton Meter Witness: Jack Griffin, Oil Conservation Div., New Mex


NOV


HAHN FEDERAL NO. 2 TOM TOM FIELD
CHAVES COUNTY, NEW MEXICO
NEUTRON POROSITY LOG PERFS: 3945',46,47,52,53,
60,61,67,68,72,73,81,82,83 and 3988'
RETAINER 4045'
PERFS: 4065',69,70,73,81,82,83, 4100,01,02
and 4103' - THESE PERFORATIONS WERE
SQUEEZED WITH 75 SACKS CLASS C
3900
4000
ABTD
Caliper
GR
F. R. (GR)
Squeezed
F-Curve
NEUTRON
4100

KUS

WATER ANALYSIS REPORT
furnished by TRETOLITE CHEMICALS

COMPANY:	FLAG REDFERN OIL CO.
LEASE:	HAHN FED.
SAMPLE POINT:	HEATER TREATER
SAMPLE DATE:	4-15-88
SAMPLE TEMP.:	NA

pH:	4.9
H2S:	110
SPECIFIC GRAVITY:	1.19

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO3	61.00	1.00
Cl	170400.00	4800.00
SO4	125.00	2.60
Ca	36000.00	1800.00
Mg	10449.00	856.48
Na	49383.96	2147.13

IONIC STRENGTH =	6.13
TOTAL HARDNESS =	133000.0 mg/ltr.
TOTAL DISSOLVED SOLIDS =	266264.8 mg/ltr.
TOTAL IRON (Fe) =	2.0 ppm

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO3)2	1.00	81.04
CaSO4	2.60	177.27
CaCl2	1796.40	99699.96
Mg(HCO3)2	0.00	0.00
MgSO4	0.00	0.00
MgCl2	856.48	40785.36
NaHCO3	0.00	0.00
Na2SO4	0.00	0.00
NaCl	2147.13	125521.10

CALCULATED SCALING TENDENCIES

SCALING INDEX

CaCO3 @ 80 DEG F. =	-0.3
CaCO3 @ 120 DEG F. =	0.4

SATURATION POINT

CaSO4 @ 70 DEG F. =	289.0 MG/LTR.
CaSO4 @ 110 DEG F. =	309.5 MG/LTR.

(THIS SAMPLE CONTAINED 177.3 MG/LTR. CaSO4)

WATER ANALYSIS REPORT
furnished by TRETOLITE CHEMICALS

COMPANY:	FLAG REDFERN OIL CO.
LEASE:	SECTION 26
SAMPLE POINT:	WINDMILL
SAMPLE DATE:	4-15-88
SAMPLE TEMP.:	NA

pH:	7.8
H2S:	0
SPECIFIC GRAVITY:	1

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO3	366.00	6.00
Cl	852.00	24.00
SO4	125.00	2.60
Ca	40.00	2.00
Mg	24.30	1.99
Na	658.08	28.61

IONIC STRENGTH =	0.04
TOTAL HARDNESS =	200.0 mg/ltr.
TOTAL DISSOLVED SOLIDS =	2064.5 mg/ltr.

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO3)2	2.00	162.08
CaSO4	0.00	0.00
CaCl2	0.00	0.00
Mg(HCO3)2	1.99	145.74
MgSO4	0.00	0.00
MgCl2	0.00	0.00
NaHCO3	2.01	168.69
Na2SO4	2.60	184.97
NaCl	24.00	1403.04

CALCULATED SCALING TENDENCIES

SCALING INDEX

CaCO3 @ 80 DEG F. =	0.5
CaCO3 @ 120 DEG F. =	0.8

SATURATION POINT

CaSO4 @ 70 DEG F. =	2436.8 MG/LTR.
CaSO4 @ 110 DEG F. =	2493.6 MG/LTR.

(THIS SAMPLE CONTAINED 0.0 MG/LTR. CaSO4)

WATER ANALYSIS REPORT
furnished by TRETOLITE CHEMICALS

COMPANY:	FLAG REDFERN OIL CO.
LEASE:	SECTION 35
SAMPLE POINT:	WINDMILL
SAMPLE DATE:	4-15-88
SAMPLE TEMP.:	NA

pH:	7.8
H2S:	0
SPECIFIC GRAVITY:	1

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO3	366.00	6.00
Cl	746.00	21.01
SO4	125.00	2.60
Ca	40.00	2.00
Mg	24.30	1.99
Na	589.41	25.63

IONIC STRENGTH =	0.03
TOTAL HARDNESS =	200.0 mg/ltr.
TOTAL DISSOLVED SOLIDS =	1890.0 mg/ltr.

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO3)2	2.00	162.08
CaSO4	0.00	0.00
CaCl2	0.00	0.00
Mg(HCO3)2	1.99	145.74
MgSO4	0.00	0.00
MgCl2	0.00	0.00
NaHCO3	2.01	168.69
Na2SO4	2.60	184.97
NaCl	21.01	1228.48

CALCULATED SCALING TENDENCIES

SCALING INDEX

CaCO3 @ 80 DEG F. = 0.5
CaCO3 @ 120 DEG F. = 0.8

SATURATION POINT

CaSO4 @ 70 DEG F. = 2436.8 MG/LTR.
CaSO4 @ 110 DEG F. = 2493.6 MG/LTR.

(THIS SAMPLE CONTAINED 0.0 MG/LTR. CaSO4)